**Supplementary material**

**Appendix 1:** **Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist**

| **SECTION** | **ITEM** | **PRISMA-ScR CHECKLIST ITEM** | **REPORTED ON PAGE #** |
| --- | --- | --- | --- |
| **TITLE** | | | |
| Title | 1 | Identify the report as a scoping review. | 1 |
| **ABSTRACT** | | | |
| Structured summary | 2 | Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives. | 2 |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach. | 4 |
| Objectives | 4 | Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives. | 5-6 |
| **METHODS** | | | |
| Protocol and registration | 5 | Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number. | 6 |
| Eligibility criteria | 6 | Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale. | 7 |
| Information sources\* | 7 | Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed. | 7 |
| Search | 8 | Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated. | S1 |
| Selection of sources of evidence† | 9 | State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review. | 8 |
| Data charting process‡ | 10 | Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators. | 8 |
| Data items | 11 | List and define all variables for which data were sought and any assumptions and simplifications made. | 8 |
| Critical appraisal of individual sources of evidence§ | 12 | If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate). | Not applicable |
| Synthesis of results | 13 | Describe the methods of handling and summarizing the data that were charted. | 8 |
| **RESULTS** | | | |
| Selection of sources of evidence | 14 | Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram. | 8-9 |
| Characteristics of sources of evidence | 15 | For each source of evidence, present characteristics for which data were charted and provide the citations. | 8-18 |
| Critical appraisal within sources of evidence | 16 | If done, present data on critical appraisal of included sources of evidence (see item 12). | Not applicable |
| Results of individual sources of evidence | 17 | For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives. | Table 1 |
| Synthesis of results | 18 | Summarize and/or present the charting results as they relate to the review questions and objectives. | 8-18 |
| **DISCUSSION** | | | |
| Summary of evidence | 19 | Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups. | 18-21 |
| Limitations | 20 | Discuss the limitations of the scoping review process. | 21-22 |
| Conclusions | 21 | Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps. | 22 |
| **FUNDING** | | | |
| Funding | 22 | Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review. | Not applicable |

**Appendix 2**: **Search terms used in the different bibliographic databases**

|  |  |
| --- | --- |
| Step 1 | (MJEMB.EXACT.EXPLODE("telemetry") OR MJEMB.EXACT.EXPLODE("telemedicine") OR MJMESH.EXACT.EXPLODE("Telemedicine") OR MJMESH.EXACT.EXPLODE("Telemetry") OR ti(telemed\*) OR ti(tele PRE/0 med\*) OR ti(telecar\*) OR ti(tele PRE/0 car\*) OR ti(telehealth) OR ti(tele PRE/0 health) OR ti(telehealthcare) OR ti(tele PRE/0 healthcare) OR ti(tele PRE/0 health PRE/0 care) OR ti(telehealth PRE/0 care) OR ti(telehomecare) OR ti(tele PRE/0 homecare) OR ti(tele PRE/0 home PRE/0 care) OR ti(telehome PRE/0 care) OR ti(emedicine) OR ti(e PRE/0 medicine) OR ti(e PRE/0 health) OR ti(ehealth) OR ti(e PRE/0 patient\*) OR ti(epatient\*) OR ti(remote PRE/0 patient\*) OR ti(remote PRE/0 diagnos\*) OR ti,ab(remote PRE/0 monitoring) OR ti,ab(remote PRE/0 evaluation) OR ti,ab(remote PRE/0 assessment) OR ti,ab(remote PRE/0 supervision) OR ti,ab(remote PRE/0 management) OR ti,ab(telemetr\*) OR ti,ab(telemonitoring) OR ti,ab(tele PRE/0 monitoring) OR ti(teleimaging) OR ti(tele PRE/0 imaging) OR ti(telecardiology) OR ti(tele PRE/0 cardiology) OR ti,ab(homemonitoring) OR ti,ab(home PRE/0 monitoring)) |
| AND |  |
| Step 2 | (MJMESH.EXACT.EXPLODE("Economics") OR MJMESH.EXACT.EXPLODE("Costs and Cost Analysis") OR MJMESH.EXACT("Cost-Benefit Analysis") OR MJMESH.EXACT.EXPLODE("Cost Sharing") OR MJMESH.EXACT.EXPLODE("Cost Control") OR MJMESH.EXACT("Cost Savings") OR MJMESH.EXACT.EXPLODE("Health Care Costs") OR EMB.EXACT.EXPLODE("economic evaluation") OR EMB.EXACT("cost benefit analysis") OR EMB.EXACT("cost minimization analysis") OR EMB.EXACT("cost utility analysis") OR EMB.EXACT("cost effectiveness analysis") OR EMB.EXACT.EXPLODE("economic aspect") OR EMB.EXACT("health care organization") OR ti(economic\*) OR ti(resource PRE/0 allocation\*) OR ti(allocation NEAR resource\*) OR ti(resource PRE/0 use) OR ti(cost NEAR illness) OR ti(Cost PRE/0 Utility PRE/0 Analysis) OR ti(burden NEAR disease) OR ti(value NEAR money) OR ti(budget\*) OR ti(economic\*) OR ti(cost\*) OR ti(price\*) OR ti(pricing) OR ti(pharmacoeconomic\*) OR ti(pharmaco PRE/0 economic\*) OR ti(fiscal) OR ti(funding) OR ti(financial) OR ti(finance) OR ti(expenditure\*) OR ti,ab(cost NEAR effectiveness NEAR analysis) NOT (ti(energy) OR ti,ab(energy PRE/0 cost) OR ti(oxygen\*) OR ti(metabolic PRE/0 cost) OR ti,ab(energy PRE/0 expenditure) OR ti,ab(oxygen PRE/0 expenditure))) |
| *AND* |  |
| Step 3 | ((TI(random\*) OR MESH.EXACT(cross-over studies) OR MESH.EXACT(double-blind method) OR MESH.EXACT(random allocation) OR MESH.EXACT(single-blind method) OR EMB.EXACT(crossover procedure) OR DTYPE(randomized controlled trial) OR EMB.EXACT(double blind procedure) OR EMB.EXACT(randomization) OR EMB.EXACT(randomized controlled trial) OR EMB.EXACT(single blind procedure))) |

**Appendix 3: Details of study costing by category**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Authors** | **Country** | **Direct costs** | **Indirect costs** | **Perspective** | **Valorisation** | **Sensitivity analysis** |
| **Cardiology** | | | | | | |
| Barrett (2019)36 | Australia | Costs of assistants and clinicians.  Cost of training  Time and cost of textbooks. | None | Health system | Bottom-up microcosting | Probabilistic bootstrap and 4 sensitivity analyzes. |
| Brabyn (2016)37 | UK | Medical costs (hospitalizations, consultations, drugs) and costs of the intervention | None | Health and social system | Self-reporting of resources consumed by the patient. Unit costs are taken from the Bristish national Formulary, the Personal Social Services Research and costs from the NHS. 2012/2013 costs. | Probabilistic, excluding non-mental health costs |
| Choi Yoo (2014)38 | USA | Intervention cost (time of doctors and nurses, technical maintenance) | None | Health system | Based on annual salaries, start-up costs | Deterministic, new patients receiving the intervention and reduction in intervention costs by considering only maintenance costs |
| Compen (2020)39 | Netherlands | Consultations and medication | Loss of productivity | Society | IMTA questionnaire | Probabiliste |
| Dear (2015)40 | Australia | Medical resources: doctor's time, supervisor's time,  And Internet access, telephone | None | Health system | Questionnaire on consultations, admissions and medication use.  Unit costs using government data | Probabilistic not detailed but acceptability curve |
| Donohue (2014)41 | USA | Medical costs: consultations, laboratories, emergencies, hospitalization  Cost of support | None | Health system | Medicare and private insurers | Probabilistic, exclusion of the most expensive patient and doubling of the cost of the intervention |
| Morriss (2019)42 | UK | Medical costs (consultation, hospitalization, transport, medication, informal care)  Cost of technology | None | Health system | Questionnaire-based (CSRI - Client Service Receipt Inventory)  NHS unit costs | Bootstrap |
| Nobis (2018)43 | Deutschland | Direct medical costs (time of professionals, drugs  Cost of the intervention  Direct non-medical transport costs | Loss of productivity | Society | By the company for the intervention  Unit cost based on one publication  Average salary | Probabilistic, cost of the intervention: 50% decrease, 50% and 100% increase. |
| Painter (2017)44 | USA | Medical costs: consultation of specialists, drugs  Costs of activities | None | Vétérans department | National data  Monitoring of activity logs | Probabilistic, modification of Qalys |
| Painter (2015)45 | USA | Cost of intervention  Consumption expenses: nursing and staff time, transport | None | Society | Veterans data  Self-reporting by patients | Bootstrap |
| Romero-Sanchiz (2017)46 | Spain | Medical cost, drugs | Loss of productivity | Society | CSRI, self-reporting by patients | Simulation |
| **Hypertension** | | | | | | |
| Dehmer (2018)14 | USA | Medical costs: consultations, hospitalization, medication, emergency, laboratory, radiology | None | Health system | Insurance and pharmacies data | Deterministic, additional pharmaceutical costs |
| Fishman (2013)15 | USA | Medical costs: staff time, drugs  Transport, cost of maintaining the system, location  Patient education, and technology | None | Health system (Health plan) | Microcosting | None |
| Kaambwa (2014)16 | UK | Medical costs: consultations, hospitalization, medication  Equipment, training | None | Health system | Data from clinical trial and published sources | Probabilistic, change of the time horizon  Decreased efficiency |
| Stoddart (2013)17 | Scotland | Medical costs: consultations, emergency, hospitalization, medication, nursing time  Patient training, device, phone, server | None | Health system (NHS) | From patient files, collected by a nurse  National unit costs | Probabilistic, cost variation 25 to 100% |
| **Implantable defibrillators** | | | | | | |
| Calo (2013)18 | Italia | Medical costs: staff time, consultations, hospitalization  Cost of the device  Social costs: transport | Loss of productivity | Hospital and patients | Amount of reimbursements and DRG code  Salaries from the national statistics institute | None |
| Guédon-Moreau (2014)19 | France | Medical costs: hospitalization, transport, consultation, treatment  Cost of the device | None | Health system | Health insurance data | Bootstrap |
| Heidbuchel (2015)20 | Europa | Medical costs: consultations, staff time, hospitalization | None | Health system | Reimbursement of the payer, DRG | Multivariate analysis, costs of different countries |
| Zanaboni (2013)21 | Italia | Medical costs: consultations, emergency, hospitalization  Transport | None | Health system and patients | Diagnostic-related Group DRG national  Reimbursement | None |
| **Connected pacemaker** | | | | | | |
| Lopez-Villegas (2020)22 | Spain | Medical costs: consultations, hospitalization  Transport | Loss of income | Health system and patients | Hospital and patient data | Probabilistic, bootstrap |
| **Cardiac Rehabilitation** | | | | | | |
| Frederix (2017)23 | Belgium | Medical costs: consultation, hospitalization, diagnosis  Intervention: nursing time, accelerometer, web page | None | Health system and patients | Financial department of hospital and insurance | Bootstrap |
| Hwang (2018)24 | Australia | Medical costs: hospitalization, physiotherapy time, nursing time, home visits  Equipment  Transport | None | Health system | Salary costs  National tax for transport | Probabilistic, evolution of costs according to the number of exercises and for readmissions for all causes |
| Kidholm (2016)25 | Denmark | Medical costs: hospitalization, consultations,  Transport  Equipment,  Training | None | Health system | Company equipment price  Patient data from the national registry and DRG | Probabilistic, exclusion of very expensive patients, exclusion of device costs, exclusion of patients who do not have 12 months of follow-up |
| Kraal (2017)26 | Netherlands | Medical costs: consultations, hospitalization, medication  Equipment  Training  Phone calls | Loss of productivity | Society | Unit costs from the Dutch guide  Hourly Physician Salary  Dutch standard costs | Inclusion of presentism  Bootstrap |
| Maddison (2019)27 | New Zealand | Medical costs: hospitalization, drugs  Intervention | None | Health system | National data, DRG | Deterministic, variation in sensor annuity, and efficient use of specialist time |
| **Insufficient cardiac monitoring** | | | | | | |
| Comin-Colet (2016)28 | Spain | Medical costs: drugs, examinations, care, emergency, hospitalization  Cost of diagnosis | None | Health system | Costs derived from clinical activity (ABC) | Probabilistic, variations in hospital costs |
| Cui (2013)29 | Canada | Cost of equipment and technology  Staff salaries  Travel  Administrative support  Medical costs: consultation, hospitalization | None | Health system | Data from the university register  For the hospital: Cost per weighted case value | Bootstrap |
| Frederix (2018)30 | Belgium | Medical costs: hospitalization, consultations, diagnosis | None | Health system and patient | Data from hospital departments and nomenclature of acts | None |
| Sangster (2015)31 | Australia | Cost of the intervention  Medical costs: hospitalization, emergency, consultations | None | Society partially | Patient self-reporting  Call recording  DRG | Bootstrap |
| Vestergaard (2020)32 | Denmark | Costs of using health services, drugs, consultation, hospitalization  Community service care  Equipment | None | Health system | Data from different registers | Deterministic and probabilistic |
| **Prevention of heart risks** | | | | | | |
| Desteghe (2018)33 | Belgium | Staff costs, nurse visits  Cost of device and calls | None | Health system | From observations of time spent | Deterministic sensitivity analysis, Tornado graph with reduction in device cost, decrease in nurse visits |
| Dixon (2016)34 | UK | Costs of the intervention and medical costs | None | Health system | NHS data with patient records plus questionnaires during clinical trial | Bootstrap with different durations and different average costs per patient |
| Greving (2015)35 | Netherlands | Medical costs: consultations, visits, hospitalization, medication  Transport | Loss of productivity | Society | Completion of a diary by patients, electronic record | Bootstrap |
| **Pulmonary disease** | | | | | | |
| De San Miguel (2013)47 | Australia | Cost of equipment  Medical costs: nurses, consultations, hospitalization  Transport | None | Health system | Calendar filled out by patients, data collected by phone | None |
| Hazenberg (2014)48 | Netherlands | Medical costs: nursing, hospitalization  Transport | None | Health system | Costs according to government guidelines | None |
| Lugo (2019)49 | Spain | Medical costs (resources, materials, salaries, drugs)  Transport | Loss of productivity | Health system | Hospital data | Probabilistic |
| Mc Dowell (2015)50 | Irland | Medical costs: hospitalization, emergency, consultations | None | Health system and patients | Hospital financial department | None |
| Paré (2013)51 | Canada | Medical costs: hospitalization, emergency, nurse and breathing therapist visits  Transport | None | Health system | Hourly wages  Average hospital cost | None |
| Shany (2017)52 | Australia | Medical costs: hospitalization, emergencies | None | Health system | Hospital data | None |
| Soriano (2018)53 | Spain | Medical costs: consultations, emergency, hospitalization | None | Health system | Patient database and regional data | None |
| Stoddart (2015)54 | UK | Medical costs: consultations, medication, hospitalization, emergency  Maintenance cost  Cost of equipment  Patient education | None | Health system | Registration by nurses, patient files, patient questionnaire | Bootstrap, cost variation: hospital and equipment, exclusion of non-COPD |
| Turino (2017)55 | Spain | Medical costs: hospital consultations  Cost of telephone consultations,  Cost of the device  Transport | None | Health system and patient | Government data | None |
| Udsen (2017)56 | Denmark | Medical costs: drugs, care, nurse visits  Cost of the intervention: hardware, installation, maintenance, monitoring, training  Cost of the device | None | Health and social system | DRG, national insurance data, registry-based data | Probabilistic: hospitalization for all causes, lower purchase price and economies of scale, reduced monitoring time |
| **Pulmonary artery pressure monitoring** | | | | | | |
| Cowie (2017)57 | UK | Cost of the device  Cost of complications  Medical costs: hospitalization, care | None | Health system | NHS data | Probabilistic, variation in hospitalizations and implant costs |
| Schmier (2017)58 | USA | Medical costs: hospitalization  Costs of complications,  Cost of equipment  Cost of routine monitoring | None | Society | Data from a publication, Marketscan | Deterministic, variation of all costs |
| **Diabetes** | | | | | | |
| Gordon (2014)59 | Australia | Medical costs: consultations, hospitalization, medication  Device costs  Coordination costs | None | Health system | Average cost of drugs  Hospital data  Patient self-reporting | Probabilistic, cost variation at + and - 30% |
| Varney (2016)60 | Australia | Medical costs: drugs, consultations, hospitalization, emergencies,  Cost of technology and calls  Costs of complications | None | Health system | Australian data | Deterministic  Variation in complication costs, and the absence of complications |
| Warren (2017)61 | Australia | Medical costs: consultations, hospitalization  Maintenance  Internet connection | None | Health system | System recording, DRG | Bootstrap, variation in medical costs and intervention |
| **Obesity** | | | | | | |
| Little (2016)62 | UK | Medical costs: drugs, visits, consultation, emergency, hospitalization | None | Health system | Notebook, patient records | None |
| Krishnan (2019)63 | USA | Cost of the program: self-monitoring, training, advice, administration | None | Health system | Activity based costing, electronic files, interviews | Deterministic and probabilistic, variation in program cost |
| **Dermatology** | | | | | | |
| Arora (2017)64 | India | Medical costs: medical devices, hospitalization, consultation, drugs,  Training  Telephone costs  Transportation | Loss of productivity | Society | Journal to record data by patients | Bootstrap, income level variation for lost productivity |
| **Neurology** | | | | | | |
| Comans (2017)65 | Australia | Medical costs: consultations, treatment  Equipment  Team time | None | Health system | Patient diary, logs | Bootstrap, cost evolution |
| **Gastroenterology** | | | | | | |
| Del Hoyo (2019)66 | Spain | Medical costs  Equipment | Loss of productivity  Loss of leisure | Society | Hospital register and questionnaires | Bootstrap |
| Heida (2018)67 | Netherlands | Medical costs: consultation, examinations, hospitalization  Transport | Loss of productivity | Society | Dutch guidelines | Bootstrap |
| **Nephrology** | | | | | | |
| Kaier (2017)68 | Deutschland | Medical costs: consultations, hospitalization  Equipment costs (increase for 20 patients) | None | Health system | Hospital data, unit costs of a study | Deterministic, variation in the number of participants, variation in staff costs |
| **Physiotherapy** | | | | | | |
| Fatoye (2019)69 | Nigeria | Consultations  Telecommunications | None | Health system | Questionnaire | Boostrap |
| Kloek (2018)70 | Netherlands | Medical costs: consultations, medication, hospitalization  Informal care (family), sport (equipment and license)  Maintenance, development | Loss of productivity | Society and health system | Patient self-reporting, valuation at Dutch standard costs  Informal care valued by Dutch recommended prices | Bootstrap |
| Suman (2019)71 | Netherlands | Societal costs, intervention, use of resources | Absenteeism, presenteeism, loss of productivity | Society | Microcosting | Bootstrap |
| **Oncology** | | | | | | |
| Wall (2019)72 | Australia | Medical costs  Therapeutic education  Equipment  Transport | Loss of productivity | Health system and patient | Data from patient and healthcare professionals' reports | None |
| **Chronic disease** | | | | | | |
| Henderson (2014)73 | UK | Equipment cost  Medical costs: hospitalizations, consultation, medication  Community costs, adaptation costs | None | Health and social system | Self-reporting and NHS | Deterministic, variation in equipment prices, variations in costs |
| Upatising (2015)74 | USA | Medical costs: consultation, hospitalization, emergency | None | Health system | Local database | None |